REMARKS

Applicant has considered the Office Action mailed on April 14, 2003, and the references cited therewith.

Applicant acknowledges the renumbering of the claims in the Office Action. All claim numbers in this response employ the corrected numbers. Claims 6 and 38 are amended herein, and no claims are canceled or added. Consequently, claims 2-8 and 32-44 remain pending in the Application.

The Office Action objected to claim 38 for lack of a period at the end. Claim 38 is amended to cure this defect.

Claims 2-8, 32-38, and 42-44 were rejected under 35 USC § 103(a) as being unpatentable over Sakai et al. (U.S. Patent No. 5,502,457) in view of Adventures in Fiber Optics Kit by Industrial Fiber Optics, Inc. ("AFOK"), showing a copyright date of 1998. Applicants respectfully traverse these rejections.

The Application describes significant advantages from employing a specific type of faceplate material (fibrous crystals) over another type (fused glass fibers) for large, tiled projection systems. This specific type has never before been tiled to produce such systems. Applicant has discovered that this type of material has a property (absence of peripheral dead fibers) that produces the advantages. The prior art was not aware of this property of Applicant's material, nor has the art made any use of this property; the prior art suggests only single, isolated sheets of this material.

Claim 2 recites a pre-screen of tiled faceplates of "fibrous crystal." The cited Sakai primary reference suggests only the type of faceplate called "fused" in the Application. The secondary AFOK reference shows only single sheets of a fibrous crystal. There is no connection between these references. Sakai suggests no use or advantages of fibrous crystalline material, and AFOK has no suggestion of combining multiple sheets of fibrous crystal in any manner or for any purpose.. However, the Office Action, after noting that AFOK discloses a single optical faceplate of fibrous crystal, adduces only the bare conclusory statement that

> "It would have been obvious to one of ordinary skill in the art at the time of [*sic*] the invention was made to utilize the optical faceplate disclosed by Adventures in Fiber Optics Kit by Industrial Fiber Optics, Inc. in substitution of

> the optical faceplate disclosed by Sakai et al.'s invention, for the purpose of transferring the image to be displayed (page 9, lines 18-20)." (page 4)

The Sakai patent plainly limits itself to fused faceplates constructed of individual large fibers. Individual fibers 12 are bonded to each other with a black adhesive; col. 4 lines 33-34 and 37; also col.6 lines 39-442, 61-62, and 65, col. 7 lines 8-13. Small fiber size is of value to Sakai, because the point of his invention is to improve the resolution of his display. Yet a passage cited in the Office Action notes a size of 30 microns for block 30, which has the smallest fibers of any of the blocks 3, 7, 30, 35,40, and 41. And Sakai does not "tile" these blocks; he uses them only as individual blocks 10 , 11 (Figs. 1, 4); 30 (Figs. 4, 7); 40, 41 (Figs. 5, 7). Indeed, the blocks 3 that are tiled, have a much larger diameter, 250 microns; col. 2 line 38. At col. 8 lines 46-52, Sakai states that blocks 3 may have smaller fiber sizes, but that 30 microns is already below the limit of feasible manufacturability and expense, even for the untiled blocks. Yet 30 microns is already orders of magnitude greater than the size or pitch of the optical channels in fibrous crystals, which are "on a scale of nanometers"; Specification, page 6 line 19.

The Office Action proposes that this scale is equivalent to Sakai's admitted minimum size, because 30 microns equals 30,000 nanometers; Office Action, page 4, first paragraph. However, this is akin to saying that the Washington Monument has a scale of centimeters.[1] Those in almost every technical field use metric measurements divided into groups that differ by three orders of magnitude: milli-, micro-, nano-, and so forth. Each range is commonly employed to express numbers in the approximate range of 1 to 1000. As an example in even a fabricated nonce technology, a measure of 0.03 Helens[2] would be expressed as "30 milliHelens," not as "30,000 microHelens." Therefore, one in any art would assume that 30 micrometers is at the very least more than a full order of magnitude larger than a scale of nanometers.

The primary Sakai reference thus suggests no linkage to the secondary AFOK reference. Likewise, the AFOK catalog suggests no linkage to Sakai, or to any device that might desire to construct larger optical faceplates from smaller units, except by hindsight from Applicant's disclosure. The single page concerning the fibrous crystal Ulexite shows only a single block of

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[1] -- About 14,000 centimeters, to be somewhat more specific.

[2] --It will be recalled from Homer's Odyssey that Helen of Troy had a face that could launch 1000 ships. Therefore, 1 milliHelen signifies sufficient comeliness to launch one ship.

the material, and does not mention placing multiple units together. Nor does AFOK contain any hint of the specific property of Ulexite fibrous crystals that permits seamless tiling: their absence of dead fibers at the periphery in an individual block.

Thus, neither cited reference suggests any links to the other without the use of Applicant's disclosure. Such hindsight reconstruction no permitted under 35 USC 103 under a long line of decisions. See, for example, *In re Lee*, 61 USPQ2d 1430 (Fed. Cir. 2002).

Claims 3-36 depend from claim 2, thereby incorporate all of its features. These claims evince other distinctions over the prior art as well.

For example, amended claim 6 recites that the faceplate which is tiled has a numeric aperture "of about 0.2." The only tiled faceplates in Sakai are 3 (Figs. 1, 4, 8) and 7 (Figs. 5, 7). In col. 2 lines 8-17, Sakai discusses the possibility of a low numerical aperture for the fibers in block 3 of his prior art in Fig. 8, and concludes that such an aperture would be disadvantageous. Therefore, Sakai actually teaches away from such a low aperture in his tiled blocks, and prefers higher apertures, such as 0.5 (col. 4 line 63; col. 7 line 35) and 1.0 (col.8 line 11). Although the aperture of the non-tiled scattering plates can be as low as 0.2, Sakai several times declares that the numerical aperture of the tiled faceplates should be higher than that of the untiled scattering plates (e.g., col. 4 lines59-67; col. 7 lines 30-39; col. 8 lines 29-36).

In another example, claim 33 declares fiber sizes "on a scale of nanometers." As discussed above, those in the art would consider Sakai's 30,000 nanometer fibers to lie at least more than an order of magnitude outside this range. And Sakai believes that smaller fiber sizes are not feasible for this purpose; col. 46-52, thus teaching away from Applicant's use of a material that easily achieves much smaller sizes. Claim 35 recites a similar size, smaller than even the materials that Sakai considers to be impractical.

Dependent claims 4-5, 7-8, and 35-36 concern types of materials not found in the AFOK reference. For example, AFOK suggests nothing as to how---or even whether---Ulexite could be fabricated, or that non-natural grown crystals might have advantages, as recited in claims 4, 5, 8, and 36. AFOK does not suggest the use of "Selenite, Artinite and Aragonite" as in claim 7. AFOK likewise suggests no use of the "dopant" in claim 35.

Independent claim 37 also clearly calls forth tiled faceplates of "fibrous crystal." This claim therefore distinguishes over any permissible combination of the cited Sakai and AFOK references in the same manner as does claim 2.

Dependent claims 38-44 incorporate the recitations of their parent claim 37. Applicants respectfully traverse the rejections of claims 39-41 under 35 USC § 103(a) as being unpatentable over Sakai et al. in view of AFOK, and further in view Bilbro et al. (U.S. Patent No. 5,974,215). The tertiary reference to Bilbro cures none of the deficiencies of Sakai or AFOK. Further, as to claim 39, Bilbro shows overlapping fiber bundles, not overlapping "light sources." In fact, Bilbro has only a single source of radiation, presenting a single image to multiple sensors via his overlapped fiber bundles. As to claim 40, Applicant does not find within Bilbro any specific constitution of his light source; he shows the incoming radiation only as a set of arrows 30, and appears to identify their origin only as "a source"; col. 5 line15. the same holds for claim 41's specification of a "collimated" light source.

CONCLUSION

For the above reasons, Applicant urges that the pending claims define patentably over the prior art, and respectfully requests their reexamination and allowance. The Examiner is invited to telephone Applicant's attorney at (612) 373-6971 to facilitate prosecution of this Application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, P.O.Box 1450, Alexandria, VA 22313-1450, on this 14 day of July, 2003.

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